

LOW-BORON GLASS FIBERS AND GLASS COMPOSITIONS FOR MAKING THE SAME

Abstract of the Invention

5 Low-boron, high-barium glass compositions and fine-diameter glass fibers for forming clean room HEPA and ULPA filters, are provided. The compositions and resulting glass fibers preferably comprise a low concentration, less than about 1 weight percent, of boric oxide, a relatively high concentration of barium, such as from about 5.5 to about 18 weight percent barium oxide, 10 and a concentration of alkali oxide ranging from about 10 to about 14.5 weight percent. Alumina is preferably present in the glass fiber compositions and the resulting glass fibers in a range of from about 4 weight percent to about 8 weight percent, and calcium oxide and magnesium oxide are preferably present in a range of from about 1 weight percent to about 6 weight percent and from 15 about 0 weight percent to about 3.5 weight percent, respectively. The glass fiber compositions also preferably include from about 2 to about 6 weight percent zinc oxide, from about 0.1 to about 1.5 weight percent fluorine, and very low concentrations of manganese oxide, ferric oxide and various impurities such as strontium oxide, lithium oxide, titanium oxide, and zirconium oxide. 20 Preferably, the balance of the composition is silicon dioxide.

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